CLAIMS

1). (Previously presented) A method, comprising:

analyzing each routine, of a software program having a plurality of separately compilable routines, to create a plurality of local side-effect lattice problems for each routine, a side-effect of a routine being the reading from or writing to a storage by the routine;

merging the local side-effect lattice problems to create a global side-effect problem;

computing a global solution to the global lattice problem; and

splitting the global solution into local solutions for the local side effect lattice problems.

2). (Cancelled)

3). (Previously presented) The method of claim 1, further comprising:

determining, for each routine, whether a pointer parameter within the routine is used to write to or read from a storage device.

4). (Original) The method of claim 3, further comprising:

determining for each routine whether the pointer parameter is used to derive a return value of the routine.

5). (Previously presented) The method of claim 4, further comprising:

computing a lattice value associated with each of the pointer parameters, wherein the lattice value comprises one or more of a return, write, and read effect.

6). (Original) The method of claim 5, further comprising:

providing the lattice values to an interprocedural analysis solver to optimize compilation of the software program.

7). (Previously presented) The method of claim 6, further comprising:

representing the local side-effect lattice problems as directed graphs having edges and vertices, wherein

each edge has an associated monotone transfer function;

each vertex has a vertex value, wherein the vertex value is one of formal parameter, implicit parameter, local pointer variable, or gate parameter; and

a subset of the vertices is marked with the lattice values.

8). (Previously presented) A computer-readable medium having stored thereon a plurality of instructions, said plurality of instructions when executed by a computer, cause said computer to perform:

analyzing each routine, of a software program having a plurality of separately compilable routines, to create a plurality of local side-effect lattice problems for each routine, a side-effect of a routine being the reading from or writing to a storage by the routine;

merging the local side-effect lattice problems to create a global side-effect problem;

computing a global side-effect lattice solution to the global side-effect lattice problem; and

splitting the global side-effect lattice solution into local side-effect solutions for the local side-effect lattice problems.

9). (Cancelled)

10). (Previously presented) The computer-readable medium of claim 8 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform:

determining, for each routine, whether a pointer parameter within the routine is used to write to or read from a storage device.

11). (Original) The computer-readable medium of claim 10 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform:

determining for each routine whether the pointer parameter is used to derive a return value of the routine.

12). (Previously presented) The computer-readable medium of claim 11 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform,

computing a lattice value associated with each of the pointer parameters, wherein the lattice value comprises one or more of a return, write, and read effect.

13). (Original) The computer-readable medium of claim 12 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform:

providing the lattice values to an interprocedural analysis solver to optimize compilation of the software program.

14). (Previously presented) The computer-readable medium of claim 13 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform:

representing the local side-effect lattice problems as directed graphs having edges and vertices, wherein

each edge has an associated monotone transfer function;

each vertex has a vertex value, wherein the vertex value is one of formal parameter, implicit parameter, local pointer variable, or gate parameter; and

a subset of the vertices is marked with the lattice values.

15). (Previously presented) A system, comprising:

a processor;

a memory connected to the processor storing instructions for interprocedural side-effect analysis executed by the processor, a side-effect of a routine being the reading from or writing to a storage by the routine;

a storage connected to the processor that stores a software program having a plurality of separately compilable routines;

wherein the processor analyzes each routine, of the software program, to create a plurality of local side-effect lattice problems for each routine;

wherein the processor merges the local side-effect lattice problems to create a global side-effect lattice problem; and

wherein the processor computes a global solution to the global lattice problem and splits the global solution into local solutions for the local side-effect lattice problems.

16). (Cancelled)

17). (Previously presented) The system of claim 15, wherein the processor determines for each routine, whether a pointer parameter within the routine is used to write to or read from the storage device.

18). (Original) The system of claim 17, wherein the processor determines for each routine whether the pointer parameter is used to derive a return value of the routine.

19). (Previously presented) The system of claim 18, wherein the processor:

computes a lattice value associated with each of the pointer parameters, wherein the lattice value comprises one or more of a return, write, and read effect.

20). (Original) The system of claim 19, wherein the processor:

provides the lattice values to an interprocedural analysis solver to optimize compilation of the software program.

21). (Previously presented) The system of claim 20, wherein the processor:

represents the local side-effect lattice problems as directed graphs having edges and vertices, wherein

each edge has an associated monotone transfer function;

each vertex has a vertex value, wherein the vertex value is one of a formal parameter, implicit parameter, local pointer variable, or gate parameter; and

a subset of the vertices is marked with the lattice values.